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NATURAL HISTORY

1941

Desert Skyscrapers • Grandfather Fish • Bear Quads

Midway's Feathered Airmen • Eskimos • Sea Elephant

After a period of slaughter which threatened to exterminate this picturesque mammoth of the sea, rigid protection may enable layman and scientist alike to observe its interesting habits on the islands off the California coast

JUST ahead, off the port bow, a bulky brown mass projected vertically two or three feet above the blue water; it suggested an ill-painted buoy, or the butt of a large tree, upright in the sea. As the ship approached closer, several observers almost simultaneously cried, "Sea elephant!" Some had never seen such a creature, but all guessed its identity almost on first glance. Unmistakable were its huge body and characteristic proboscis, flopped over in front of its mouth. The animal remained motionless regarding the trim *Velero III* for a few moments, finally sinking from sight of the approaching ship.

In 1884 Dr. Charles H. Townsend, former director of the New York Aquarium, made an extensive cruise along the Pacific coast of Lower California, searching for specimens of the Northern Elephant Seal, or Sea Elephant. During the trip he was able to obtain only sixteen specimens at San Cristobal Bay, which were prepared for the United States National Museum. Numerous bleached bones of the elephant seal were found along the coast and on the offshore islands, attesting to the former abundance of the species, whose range once extended from Cape San Lazaro near Magdalena Bay, Baja California,

QUIET: please go away and let us sleep. A congregation of sea elephants in a rocky cove on East Bonito Island off the coast of Mexico's Lower California, indulging in their favorite pastime. The herd consists principally of adult

females who lack the ten to twelve-inch trunk. A pup nestles between two hulks in the foreground and a young awakened bull rises in protest, lending action for the cameraman

Photos, Courtesy of Allan Hancock Foundation



THE TRUNK contains inflatable air chambers and flap-like valves which close for diving. A rumble is sometimes emitted which gains resonance in its fleshy interior



JUMBO of THE DEEP

By WOODBRIDGE WILLIAMS

to Point Reyes just north of San Francisco, California. The decline of the elephant seal was due to the extended activities of sealing and whaling ships which sought this peculiar animal for its bountiful supply of valuable oil.

Again in 1911 Doctor Townsend investigated the realm of the sea elephant on board the United States Bureau of Fisheries' ship *Albatross*. To his surprise he found on the then uninhabited Guadalupe Island, lying off the northern coast of Lower California, a herd of approximately 125 northern elephant seals hauled out on Elephant Beach on the northwest side of the island. Since the rediscovery of the species, there has been a substantial increase in the number of seals on Guadalupe Island. A good deal of the credit for the come-back of these animals is due the Mexican Government, which has afforded them protection for the last eighteen years through the maintenance of a garrison of soldiers on the island for this purpose.

For many years Guadalupe Island was considered to be the only locality where the northern elephant seal landed, or in the sealer's terminology, "hauled out" on the beach. But Doctor Townsend, enthusiastic over the increase of these seals, which he for-

merly believed approaching extinction, optimistically wrote in *NATURAL HISTORY* Magazine (February, 1924), "The casual reappearance of the Elephant Seal at other islands from Cedros northward to the Santa Barbara Islands may reasonably be expected."

It was in October, 1940, that the *Velero III*, belonging to the University of Southern California and used for marine exploration under the auspices of the Allan Hancock Foundation, had sighted an elephant seal far to the north of Guadalupe Island, off Point Vicente, just west of the busy port of San Pedro, California. During the last few years, one and sometimes a few more elephant seals have been seen swimming in the sea or hauled out on the islands, off the coast of southern California. These islands are collectively known as the Channel Islands, or the Santa Barbara Islands, as referred to by Doctor Townsend. The Allan Hancock Foundation feels that at present it is not wise to publicize the definite localities where elephant seals have recently been observed on the Channel Islands. Rigorous protection of these animals from molestation by yachtsmen and fishermen is absolutely necessary to insure the continued increase of sea elephants on the islands off the coast of southern California. Despite the still few numbers of elephant seals in this region, the fact remains that Doctor Townsend's prediction of seventeen years ago has been borne out, and in its entirety: for the sea elephants, as well as coming north to California, are going south to breed on islands long vacated by their kind.

In 1933, while searching for elephant seals in preparation of a group for the Field Museum of Natural History, the *Velero III* chanced to visit

East Bonito Island, about 150 miles southeast of Guadalupe Island. To their surprise and delight they discovered a breeding herd of elephant seals inhabiting the rocky coves that indent the rugged island coastline. The situation was quite in contrast to the observations made by the California Academy of Natural Science's expedition in 1922, when they reported finding many bleached bones as the only indication that the northern elephant seal was once abundant on the island.

This year the island again teemed with sea mammals. In late February, 1941, the skiff from the *Velero III* met with a noisy reception as it headed into a cove surrounded by crags except at the farther end where small waves broke on a boulder-strewn beach. Pods of pup sea lions dotted the kelp-streaked water with their shiny dark heads, accompanied here and there by a larger cow. In contrast to the actively moving sea lions, most of which rapidly floundered into the water upon our arrival and swam gracefully about the skiff, barking like so many frightened dogs—great, dirty brown forms, ten to fifteen feet in length, lay high on the strand, almost completely unconcerned over the hesitantly approaching skiff. One lumbering elephant did make a half-hearted attempt to leave the beach but was carried by its ambition only as far as the water's edge, where it bogged down, lying half submerged and greatly suggesting a floating hippopotamus in an African river. One elephant seal swam leisurely about in the cove, making the landing party a bit apprehensive over the animal's potential ability to upset the skiff. But it soon seemed evident that the creature was incapable of planning such an attack.

With the scraping of the skiff on the beach, the party scrambled and waded ashore, then leisurely photographed and observed the sleeping hulks, as if they were prepared specimens behind plate glass in some museum. All that was missing was a tag reading: "Northern Elephant Seal, *Mirounga angustirostris*." Only occasionally would one of the listless forms rear on his foreflippers and bend his neck far back to emit rumbles which seemed to start deep in his throat and gain resonance in his fleshy proboscis. The sound was one which a seasick person certainly would not care to hear. The sea elephant would hold this position for a moment, then flop back onto the beach, or more often onto the body of a sleeping companion. With a few sweeps of his foreflippers he would blanket his back with sand as protection from the rays of a semitropical sun. Soon pits would form in the sand beneath his nostrils from silently exhaled breath. The creature was happy again, for he was fast asleep.

Only after much provocation by means of rocks

was one of the bulls convinced that we wished him to perform by moving toward the water. He accomplished the feat by using the foreflippers as vertical levers. The forward motion was initiated by the lifting of the body just in front of the hind flippers, forming a contraction which traveled toward the head. These movements suggested the muscular waves in the fleshy foot of a moving snail, though the sea elephant was far less graceful. He accomplished progress by much grunting and scraping of cobblestones on the beach. The hind flippers were not directly used but simply dragged along on the sand and over the rocks.

The cove of landing sheltered a group of bulls; but in other indentations to the west there were a number of cows, smaller, about ten feet in length, and lacking the short trunk of the adult male. Accompanying a good many of these cows were plump pups, so round and fat that they could hardly move. Sleek and shiny these infants were, quite in contrast to the bedraggled, almost emaciated appearance of their elders, who at that time of year were shedding their skins in much the same manner as do humans who have acted like seals on a beach for too long a period of time. The adults seemed to feed little during shedding, as they appeared to have lost a great deal of weight.

Exactly how old the young pups were, or where they were born, was somewhat of a mystery. Little is known concerning the life histories of these animals, although Mr. Lawrence M. Huey of the San Diego Society of Natural History reported in 1926 that the remains of four small elephant seals (about 30 inches in length) on the beach at Guadalupe Island would seem to support the assumption that their cycle had begun on that island.

One could walk right up to the youngsters on East Bonito and stroke their smooth gray backs. They only occasionally objected by lifting back their heads, opening their pink mouths, and hissing in lazy protest. Besides these newly-born pups, numbers of yearlings were distributed among the ill-sorted piles of unconscious adults. The sex of these youngsters was very difficult to determine from superficial observation.

East Bonito appears to have become once again a breeding ground for the elephant seal. It is interesting to note in comparison that in 1933, when the *Velero III* visited Guadalupe Island, only large bulls were seen. At that time a seventeen-foot specimen was taken for the Field Museum of Natural History; its estimated weight was 5,000 pounds. Some observers have commented on the absence of young and females on Guadalupe Island, while others have reported their presence. There is yet much to be

learned concerning the yearly meanderings of this interesting animal.

The feeding habits of the northern elephant seal have long been a source of much conjecture. Only scanty information has been obtained from examining the stomach contents of the animals taken on the beach. Usually no food was found, only "ballast," as sealers term it, consisting of rocks and sand. But Dr. A. W. Anthony of the California Academy of Natural Sciences reported finding in the stomach of a Guadalupe sea elephant one whole fish, which had been bolted, a squid and some seaweed. The stomach contents of a specimen taken by the *Velero III* in 1933 yielded squid and seaweed. Because of the usual empty condition of the stomachs and the fact that the animals have large lustrous eyes resembling the so-called "night eyes" of nocturnal mammals, most zoologists believe that the animals are more active at night, doing their feeding at that time. The two specimens in the San Diego Zoo, on the contrary, are fed twice daily, consuming about 60 pounds of sardines. Mrs. Belle Benchley, Director, reports that she has not been able to observe any differences in the animals' activity, day or night. Of course, the artificial environment may account for such a discrepancy.

The most complete report that has been made concerning the feeding habits of the northern elephant seal was made in 1930 by Mr. Huey, who examined the stomach contents of a specimen harpooned by a fisherman 40 miles off San Diego, California. The harpooning itself was quite significant at the time, as no elephant seals had been reported so far north for many years. But what this animal had consumed for lunch was even more surprising. The meal consisted of seven ratfish (*Hydrolagus coliei*), one California dogfish shark, one puffer shark, three skates, and four squid. The study brought out several significant facts. The ratfish was the most abundant form represented, and as it lives in water from 50 to 120 fathoms deep, its presence seemed to indicate that the elephant seal had dived a comparable distance for its meal. From the evidence given by the fisherman, the sea elephant was feeding some distance offshore, and during the day. The intact vertebrae of the dogfish shark indicated the food was bolted, probably alive, as the elephant seal has poor dentition for mastication, its teeth being set quite far apart. Mr. Huey attributes the success of the elephant seal in deep-water feeding to its large eyes, which are probably quite effective when swimming far beneath the surface of the sea.

From the evidence the questions arise: does the sea elephant feed in two distinct areas—one while near the breeding or hauling grounds on the islands,

where it would feed on marine vegetation and shallow water fish and invertebrates, and another in deep water, far offshore where it must descend many feet to obtain a meal? Or does the adult sea elephant, for the most part, fast while on the islands and do most of its heavy feeding in deep water? Since we found some evidence of food in the stomachs of seals taken on the beach and the cows with pups might be expected to require nourishment, it seems likely that the animals do feed, at least to some extent, along the shores of the islands. This probably occurs at night, as most of the animals remain quite inactive during the day. When migrating at sea, it would seem from the evidence presented by Mr. Huey that the real banquet tables of this animal are in the deeper offshore waters.

Taming of the elephant seals has presented extensive problems to the San Diego Zoo. One specimen took 157 days to make up its mind that the zoo menu was acceptable. All that time force feeding was in order and required somewhat elaborate equipment. A large canvas with an aperture for the seal's head was constructed and used like a poncho to protect the animal from the handling necessary with force feeding. The animal was induced to place its head through the hole in the canvas by holding food on the opposite side. After he had been shrouded in canvas, a padded iron bit was thrust into his mouth to hold it open for the ensuing procession of fish. When the stubborn animal finally did condescend to eat on his own accord, he at first required the stimulus of the canvas before he would take the proffered meal, despite the fact that the canvas was no longer used in the actual process of feeding. The specimen lived for seven years in the San Diego Zoo—which is the longest period that institution has been able to maintain an elephant seal. The animal's career was terminated by the introduction of a large bull, which continually forced the smaller animal against the cement sides of the tank, finally killing it.

Despite the artificial surroundings and environment, zoo animals do shed some light on their habits in the wild. An interesting faculty of the northern elephant seal easily observed in the pool is the length of time the creature can remain underwater. One specimen seemed to enjoy relaxing under the shade of an overhanging shrub where he periodically submerged his head just beneath the water. Occasionally his head would break the surface and the animal would blow, making a sound like a person very much out of breath. Only for a short spell would he remain at the surface, then down he would go again. The submersion lasted on an average around three minutes, although his companion disappeared beneath the pool for a period of five minutes. Mr.

Huey reports a specimen in the zoo remaining underwater for seven minutes. These observations tie in very nicely with other evidence that these animals can dive to great depths—requiring a comparable time in breath-holding.

Many diving mammals close the nostrils so as to prevent the entrance of water. Young specimens of the northern elephant seal do this; but older ones, at least the adult males, do not contract the nostrils—they have a different modification for the purpose of diving. Mr. Huey reports that in both nasal passages there are flap-like valves that can be closed or opened at will. Also there are air chambers in the proboscis which the animals can inflate, causing many of the strange expressions so characteristic of elephant seals. Perhaps these air chambers and valves also facilitate longer submergence, although, of

course, the female lacks the proboscis with its air chambers.

The swimming methods of elephant seals can readily be observed in the zoo. When one of these seals is fully under way beneath the water, the powerful hind flippers, so useless on land, operate very much like the tail of a shark, propelling the animal along with a thrashing movement. Only when the seal is slowly cruising along the surface do the fore-flippers come into play, acting as balancers and perhaps aiding somewhat in propulsion like the pectoral fins of a fish. At this time the hind flippers, held rather far apart, propel the creature with a vertical flapping or sometimes a scissors action.

The larger specimen of the two young males now in the San Diego Zoo enjoyed swimming beneath the water along the visitors' side of the pool.

IN BATTLE, the proboscis is a major objective, as shown by the gashes on the trunk of this large male. The heavily calloused chest serves as a sort of shield, portions of which can be seen here. The warring opponents seem not to care whether this portion of their ponderous anatomy is in-

jured or not. The fighting of these seals is not so serious as that of the fur seals, which is often to the death. "Sunburn lotion" in the form of sand thrown over their backs is visible in this photograph

Courtesy of Allan Hancock Foundation



Then, slowly emerging on the opposite side, he cruised along with just the head and proboscis above the water, blowing small jets of water in front of him with his breath. His head would be constantly turned to one side, pointing toward the edge of the pool closest to him, and one might wonder at first why he persisted in this. But the secret was soon revealed by a clatter up the road.

A truck appeared above the pool. The two Steller sea lions living with the elephant seals already had their foreparts up on the concrete walk. For a change the usually listless sea elephants showed surprising energy, hauling completely out of the pool to take their breakfast of sardines directly from the keepers' hands. Gulp—headfirst down the fish would go. No chewing was observable. What a wonderful conservation of energy and time! The zoo was no place for impractical human manners. After feeding, the larger of the two elephant seals stretched out on the concrete for an after-breakfast snooze, while

his companion returned to his corner beneath the shrub and continued the incessant bobbing up and down.

The elephant seal is not a graceful creature, nor one with a pleasing "vocabulary," but he is the largest of the seals with the possible exception of his southern relative of antarctic regions. He is unique because of his proboscis, which attains a length of ten to twelve inches, and he is a tempting subject for scientific research and observation.

The home-coming of this animal to haunts long deserted stands out as a notable exception to those numerous species which have not come back. Even as Doctor Townsend predicted the return of the elephant seal to the Californian islands, so may it now be foretold that the layman and scientist alike in the near future will perhaps need not resort to the zoo or expend large sums in traveling to distant islands to see this strange creature, but will observe it "at home," in large herds on our near-by Santa Barbara Islands.



Photos, Courtesy of Allan Hancock Foundation

(Above) AN ATTEMPT TO HERD a large bull on Guadalupe Island with the sides from a cage floated ashore. Herding was difficult and apparently useless. When the animal made up his mind, he went into the cage of his own accord

(Below) HANDSOME by sea elephant standards: the head of a large bull on East Bonito Island. Notice the scanty dentition and peeling skin about the mouth

Courtesy of Allan Hancock Foundation



ELEPHANT SEALS are easy prey for the hunter, and their come-back from threatened extinction is largely to the credit of the Mexican Government. Above is the garrison house on Guadalupe Island for their protection

THE TRIM *Velero III*, research vessel belonging to the University of Southern California and used on the expedition as recounted, under the auspices of the Allan Hancock Foundation

Photo by the author

